

PATENT ABSTRACTS OF JAPAN

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(54) GREENING CONCRETE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a greening concrete capable of making water efficiency compatible with water retentivity for growing plants without taking time for planting and composting, growing plants while supplying fertilizer component and also ensuring a sufficient expansion space for roots.

SOLUTION: A proper amount of thickener and binder is added to a necessary fertilizer component, seed of a plant 3 is mixed with it to mold and process pellet-like object 1, and the object is mixed with concrete of cement, fine aggregate, coarse aggregate 2 and water to cast it on revetment of river, slope, etc. A proper amount of oyster shell, bone meal, back and nitrogen fixation germ is mixed with the pellet-like object 1. Particle size of the pellet-like object is the approximately same as that of coarse aggregate 2.



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CLAIMS

[Claim(s)]

[Claim 1] Optimum dose ****, tree planting concrete characterized by mixing a vegetable seed further, carrying out fabrication of the pellet type object, kneading a thickener and a binder for a required fertilizer component at the concrete which consists this of cement, a fine aggregate, coarse aggregate, and water, and placing to revetment, a slope, etc. of a river.

[Claim 2] A pellet type object is tree planting concrete according to claim 1 which carries out optimum dose mixing of oyster husks, a bone meal, bark, and Azotobacter further.

[Claim 3] Tree planting concrete according to claim 1 or 2 which makes particle size of a pellet type object almost equivalent to coarse aggregate.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the tree planting concrete in which vegetation was made to carry out natural growth later from the concrete placed to revetment, a slope, etc. of a river.

[0002]

[Description of the Prior Art] Generally, revetment, a slope, etc. of a river are hardened with concrete and are in the dreary condition in many cases. In order to cancel such a dreary condition, planting trees in revetment, a slope, etc. using the soil field which formed in the shape of a grid with concrete, and was surrounded with the grid is performed. Furthermore, in the case of revetment of a big river river, or the slope of a steep incline, in order to require the reinforcement as a soil tree structure object and to respond to it, cellular concrete is used, and the attempt which grows vegetation taking advantage of the porous space is also made.

[0003]

[Problem(s) to be Solved by the Invention] However, in the case of grid-like concrete, the time and effort planted after construction is needed, moderate dressing is also required and great costs increase for tree planting. On the other hand, although many pores with a diameter of several mm - dozens of mm are open in the case of cellular concrete and it has about 20% or more of voidage, when water flow nature is fully secured, difficulty is in the water retention for vegetable growth, and if there is little water flow nature, the situation of the antinomy said that it cannot enter a vegetable root although moisture reservation can be performed will arise.

[0004] This invention was made in view of the above-mentioned conventional situation, does not have the revegetation after construction, and the need for dressing, reconciles water flow nature and the water retention for vegetable growth, and it grows vegetation, supplying a fertilizer component, and also aims the expanding tooth space of a root at offering the tree planting concrete it enabled it to secure enough.

[0005]

[Means for Solving the Problem] As a means for attaining this purpose, this invention makes a summary tree planting concrete which mixes a vegetable seed further, carries out fabrication of the pellet type object, kneads a thickener and a binder to optimum dose **** and the concrete which consists this of cement, a fine aggregate, coarse aggregate, and water, and places at revetment, a slope, etc. of a river at a required fertilizer component. Moreover, in this tree planting concrete, a pellet type object makes it a summary to carry out optimum dose mixing of oyster husks, a bone meal, bark, and Azotobacter further, and to make particle size of a pellet type object almost equivalent to coarse aggregate.

[0006]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained in full detail based on an accompanying drawing. Drawing 1 shows typically the condition when placing the tree planting concrete concerning this invention to revetment, a slope, etc. of a river, and 1 is a pellet type object and is kneaded to the concrete which consists of cement, a fine aggregate (sand), coarse aggregate 2 (ballast), and water.

[0007] The pellet type object 1 adds a thickener and a binder to a fertilizer component, and after mixing the seed of the vegetation made necessary, they carry out fabrication to a particle size (about 20mm) almost equal to said coarse aggregate 2.

[0008] As a fertilizer component, although mixed fertilizers, such as nitrogen, phosphoric acid, and potash, are used, it is effective for especially flowering plant vegetation. Moreover, as a thickener, although a carboxymethyl cellulase can be used, for example, this may not be mixed. As a binder, synthetic resin adhesives, such as starch paste and acetic-acid vinyl, glia, the biotechnology cellulose discharged from acetic bacteria can be used. Furthermore, if oyster husks, a bone meal, bark, Azotobacter, etc. are mixed in the pellet type object 1, desirable effectiveness will be acquired with

vegetable growth and vegetable ta root.

[0009] A principal component is a calcium carbonate, if oyster husks dissolve in water, they will present alkalescence, and they dissolve easily by the vegetable organic acid, and expanding of a vegetable root is urged to them. The acid rain which has been a problem recently is neutralized and damage to vegetation is lessened. Moreover, since the trace element is also included so much, it is strong and a plant body with sufficient growth is secured. So to speak, oyster husks are troubled by disposal with industrial waste, and are cases of killing two birds with one stone at the point which can be used effectively.

[0010] Bone meals, such as oxen and horses, a pig, and a hen, can be used for a bone meal, and a principal component is calcium phosphate and supplies a part for important phosphorus for vegetation.

[0011] Bark is obtained from the bark of a felling tree, and although it is industrial waste currently troubled by disposal while the self-governing bodies which forbid field ware recently increase in number, this is used for it as an organic fertilizer with a delayed effect. This bark might have the high C/N ratio and it might become the cause of nitrogen starvation for vegetation, and when the nitrogen fixation bacillus was mixed and adjusted there, it became clear that a good result was obtained.

[0012] An example of the component mixing rate (weight ratio) of the pellet type object 1 is shown below.

Chemical fertilizer Five to 10 thickener One to 5 binder 5 - 10 oyster husks Five to 15 bark 30 to 50 Azotobacter Seed of minute amount vegetation One to 5 water Small quantity [0013] Thus, 15-20 (weight ratio) mixing of the formed pellet type object 1 is carried out into concrete, and it is placed to revetment, a slope, etc. of a river as mentioned above. It is desirable to hang vibrator at the time of placing, to prevent sedimentation of mortar, and to make it homogeneity from the upper layer to a lower layer. Thus, if it places, it will be in the condition that the pellet type object 1 entered between coarse aggregate 2 like drawing 1 . Said thickener and a binder make the binding action of the pellet type object 1 and coarse aggregate 2.

[0014] Work of storm sewage and a microorganism decomposes and an opening 4 produces the pellet type object 1 between coarse aggregate 2 several months after placing. The seed of the vegetation currently kneaded buds in the meantime, and dissolution absorption of the pellet type object 1 is further carried out by the root of the vegetation.

[0015] Root 3a of vegetation 3 is grown from the front face of placing concrete while the pellet type object 1 takes hold deeply in placing concrete using the opening 4 dissolved and produced, as shown in drawing 2 .

[0016] Since fertilizer components, such as chemical fertilizer, oyster husks, and bark, exist as mentioned above in placing concrete at abundance, vegetation is grown favorably, without giving back **** in any way. Thereby, trees can be easily planted in revetment, a slope, etc. of a river, and when it is especially flowering plant vegetation, the color of a flower can be attached and it can finish beautifully.

[0017] Although it may not necessarily restrict distributing on the average at the time of concrete kneading but dispersion may arise in tree planting, in such a case, the seed of said vegetation can be corrected so that seeds may be planted in a sparse part and it may be equalized if possible immediately after a sprout.

[0018] Although the voidage of placing concrete reaches by the passage of time and changes with vegetable growth gradually, it can secure the expanding tooth space of a root to the water retention list for moderate water flow nature and growth, and the moderate reservation of the fertilizer component which moreover dissolved of it is also attained. Therefore, the problem of the antinomy in said conventional cellular concrete is solvable.

[0019]

[Effect of the Invention] As explained above, according to this invention, the pellet type object which mixed the seed of a required fertilizer component and vegetation is formed. While securing the expanding tooth space of the root of the vegetation which kneaded this pellet type object to concrete, placed to revetment, a slope, etc. of a river, was made to produce an opening by the dissolution of the pellet type object after placing, and budded Since it was made to grow vegetation by the fertilizer component, it becomes possible to plant trees spontaneously, without needing the time and effort of revegetation and dressing after construction. Therefore, while being able to attain tree planting of a slope etc. cheaply, securing the revetment reinforcement of a river, it replaces with dreary concrete and the effectiveness which was [make / it / the scene of rich **** kana or color] excellent is done so. Moreover, green with flowing [little] also into the flood of a wind or some is securable because a vegetable root enters firmly into the firm concrete structure.

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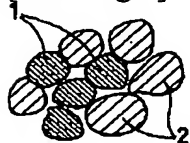
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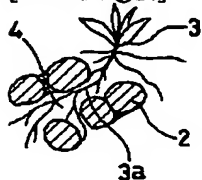
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DRAWINGS

[Drawing 1]



[Drawing 2]



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